Crop Science Reviewer Based On TOS

Sustainable Crop Production | By Agriculture Review

1. What is the primary definition of sustainable agriculture?

a) A system that maintains economic viability, environmental stewardship, and social equity over the long term.

b) A system focused solely on maximizing crop yield and profit.

c) A traditional farming method that rejects all modern technology.

d) The process of expanding agricultural lands into natural forest areas.

2. Which of the following is a fundamental concept of sustainable crop production?

a) Eradicating all crop pests using synthetic chemicals.

b) Meeting present food needs without compromising the ability of future generations to meet their own needs.

c) Monocropping to achieve economies of scale.

d) Using the maximum amount of irrigation water possible.

3. How does sustainable agriculture contribute to climate change mitigation?

a) By increasing reliance on fossil fuels for machinery.

b) By accelerating the conversion of wetlands into farmland.

c) By enhancing carbon sequestration in soils and reducing greenhouse gas emissions.

d) By promoting the continuous use of synthetic nitrogen fertilizers.

4. Which of the following farming practices is considered sustainable because it reduces soil erosion and improves soil structure?

a) Clean cultivation

b) Deep plowing

c) Slash-and-burn agriculture

d) Conservation tillage

5. In sustainable agriculture, what is the main purpose of crop rotation?

a) To disrupt pest and disease cycles and improve soil nutrient cycling.

b) To utilize the exact same soil nutrients year after year.

c) To simplify the farm's marketing strategy.

d) To reduce the need for agricultural labor.

6. Integrated Pest Management (IPM) focuses on:

a) The complete elimination of all insect life in a field.

b) Keeping pest populations below the economic injury level using combined control methods.

c) Spraying chemical pesticides on a strict weekly schedule.

d) Using only genetically modified organisms to resist pests.

7. What role do cover crops play in sustainable crop production?

a) They are primary cash crops grown for maximum profit.

b) They attract destructive pests away from natural habitats.

c) They prevent soil erosion, suppress weeds, and improve soil fertility during off-seasons.

d) They require heavy tillage to incorporate, causing soil degradation.

8. Which agricultural technique involves planting crops along the natural topography of the land to reduce water runoff and soil erosion?

a) Strip cropping

b) Monoculture

c) Terracing

d) Contour farming

9. How does agroforestry support biodiversity in sustainable farming systems?

a) By integrating trees and shrubs into crop systems to create diverse microhabitats.

b) By completely replacing food crops with timber plantations.

c) By clearing native vegetation to plant exotic tree species.

d) By removing all wildlife that might interact with agricultural crops.

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10. Sustainable crop production enhances food security primarily by:

a) Maximizing yields in a single year regardless of soil health.

b) Ensuring stable and resilient crop yields in the face of climate variability over time.

c) Relying entirely on imported food commodities.

d) Restricting food distribution to local areas only.

11. Biological nitrogen fixation is a key sustainable practice that involves:

a) Synthesizing nitrogen fertilizers in industrial chemical plants.

b) Applying large amounts of urea directly to the soil.

c) Symbiotic relationships between leguminous crops and Rhizobium bacteria to convert atmospheric nitrogen.

d) Burning crop residues to release nitrogen back into the atmosphere.

12. Which of the following is a direct environmental benefit of minimizing synthetic fertilizer use in sustainable agriculture?

a) Increased soil acidity over time.

b) Higher costs of crop production.

c) Depletion of the ozone layer.

d) Reduction of nutrient runoff leading to eutrophication in water bodies.

13. What is the significance of maintaining genetic diversity in sustainable crop production?

a) It provides a wider gene pool for breeding crops resistant to emerging pests, diseases, and climate extremes.

b) It ensures that all crops look identical for market aesthetic purposes.

c) It reduces the nutritional value of the harvested crops.

d) It makes crops more susceptible to a single widespread disease.

14. Precision agriculture contributes to sustainability by:

a) Applying blanket treatments of chemicals across entire farms.

b) Using technology to apply inputs like water and fertilizers only where and when they are needed.

c) Rejecting modern machinery in favor of animal traction.

d) Standardizing crop production across wildly different agro-ecological zones.

15. What is 'sustainable intensification' in crop production?

a) Expanding agricultural frontiers into protected nature reserves.

b) Increasing the intensity of chemical pesticide application.

c) Increasing crop yields from existing farmland while minimizing negative environmental impacts.

d) Shifting completely from crop production to intensive livestock grazing.

16. Which of the following describes the practice of leaving crop residues on the field after harvest?

a) Clean tillage

b) Stubble burning

c) Fallowing

d) Mulching or stubble retention

17. The use of compost and organic manures in sustainable crop production is mainly intended to:

a) Enhance soil organic matter, improve soil structure, and provide a slow release of nutrients.

b) Provide a rapid, short-term spike in available nitrogen for immediate plant uptake.

c) Completely sterilize the soil microbiome.

d) Increase soil compaction to support heavy machinery.

18. In the context of climate change mitigation, what is 'carbon farming'?

a) Farming exclusively on coal-rich lands.

b) Agricultural practices that aim to capture carbon dioxide from the atmosphere and store it in soil and plant biomass.

c) Maximizing the carbon footprint of agricultural supply chains.

d) Burning agricultural waste to produce black carbon.

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19. Intercropping is a sustainable approach where:

a) Land is left bare for a season to recover nutrients.

b) One crop is grown on a massive scale across thousands of hectares.

c) Two or more crop species are grown together in the same field to maximize land use and ecological synergy.

d) Crops are grown hydroponically in controlled indoor environments.

20. How does sustainable agriculture protect beneficial insects like pollinators?

a) By eliminating all floral diversity in the field.

b) By applying broad-spectrum insecticides universally.

c) By growing crops in tightly sealed greenhouses without insect access.

d) By utilizing selective pesticides only when necessary and providing diverse floral resources.

21. Water use efficiency in sustainable crop production is often achieved through:

a) Drip irrigation systems and the cultivation of drought-tolerant crop varieties.

b) Continuous flood irrigation during the dry season.

c) Pumping maximum groundwater regardless of aquifer recharge rates.

d) Cultivating water-intensive crops in arid environments.

22. A farming system that strictly prohibits the use of synthetic fertilizers, pesticides, and genetically modified organisms is known as:

a) Conventional agriculture

b) Organic farming

c) Conservation agriculture

d) Precision agriculture

23. Which principle of sustainable agriculture emphasizes fair wages, safe working conditions, and community development?

a) Economic viability

b) Environmental stewardship

c) Social equity

d) Technological advancement

24. The practice of growing different crops in sequential seasons on the same piece of land is called:

a) Monoculture

b) Relay cropping

c) Intercropping

d) Crop rotation

25. What is the main ecological advantage of polyculture over monoculture?

a) Increased resilience to pests and diseases due to species diversity.

b) Easier mechanization of planting and harvesting processes.

c) Complete elimination of all weed species.

d) Uniformity in crop maturity and harvest times.

26. Allelopathy in sustainable weed management refers to:

a) The physical removal of weeds using hand tools.

b) The release of biochemicals by one plant that inhibit the growth of competing weed species.

c) The use of synthetic herbicides to control weed populations.

d) The genetic modification of crops to resist weed competition.

27. Which soil conservation technique is best suited for steep mountainous regions to prevent soil erosion?

a) Contour plowing

b) Strip cropping

c) Terracing

d) Minimum tillage

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28. How do earthworms contribute to sustainable soil management?

a) By consuming living plant roots and reducing crop vigor.

b) By compacting the soil and reducing water infiltration.

c) By increasing the acidity of the soil profile.

d) By improving soil aeration, water infiltration, and breaking down organic matter into nutrient-rich castings.

29. What is the primary role of a 'trap crop' in sustainable pest management?

a) To attract pests away from the main cash crop to a designated perimeter or alternate crop.

b) To physically trap pests using sticky surfaces on the plant leaves.

c) To poison pests immediately upon contact.

d) To completely repel all insects from the farming area.

30. Which greenhouse gas is significantly reduced when farmers adopt alternate wetting and drying (AWD) in rice cultivation?

a) Carbon dioxide

b) Methane

c) Nitrous oxide

d) Chlorofluorocarbons

31. The concept of a 'circular economy' in sustainable agriculture involves:

a) Using linear supply chains from extraction to disposal.

b) Maximizing the purchase of external synthetic inputs.

c) Minimizing waste by recycling agricultural by-products and residues back into the production system.

d) Producing crops solely for export markets rather than local consumption.

32. Mycorrhizal fungi are important in sustainable crop production because they:

a) Cause devastating root rot diseases in most cereal crops.

b) Prevent seeds from germinating in the soil.

c) Deplete the soil of essential micronutrients.

d) Form symbiotic associations with plant roots, significantly enhancing phosphorus and water uptake.

33. Which sustainable practice involves planting trees on the boundaries of agricultural fields to protect crops from strong winds?

a) Windbreaks or shelterbelts

b) Riparian buffers

c) Alley cropping

d) Silvopasture

34. What is the primary focus of 'Regenerative Agriculture'?

a) Utilizing synthetic biology to create new crop species.

b) Rebuilding soil organic matter and restoring degraded soil biodiversity to improve the water cycle.

c) Maximizing corporate control over agricultural seed systems.

d) Focusing entirely on hydroponic food production in urban centers.

35. In sustainable agriculture, the economic threshold (ET) in pest management is:

a) The cost of purchasing organic pesticides.

b) The point at which pests have completely destroyed the crop.

c) The pest population density at which control measures should be applied to prevent economic loss.

d) The maximum legal limit for pesticide residues on harvested crops.

36. Zero tillage (no-till) farming contributes to climate change mitigation by:

a) Increasing the combustion of fossil fuels by tractors.

b) Enhancing the evaporation of soil moisture into the atmosphere.

c) Encouraging the rapid decomposition of organic matter.

d) Minimizing soil disturbance, thereby preventing the oxidation of soil organic carbon into carbon dioxide.

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37. Which of the following is a characteristic of a sustainable food system?

a) Short supply chains that connect local producers directly with consumers, reducing carbon footprints.

b) Heavy reliance on intercontinental transportation for basic staples.

c) A focus on highly processed foods over fresh produce.

d) The consolidation of food production into a few large multinational corporations.

38. The 'Three Sisters' agricultural system (corn, beans, and squash) used by indigenous peoples is a classic example of:

a) Industrial monoculture

b) Companion planting and sustainable intercropping

c) Precision agriculture

d) Controlled environment agriculture

39. How does the application of biochar benefit sustainable crop production?

a) It rapidly releases all its nutrients within one growing season.

b) It increases the soil's reliance on synthetic nitrogen fertilizers.

c) It provides a stable form of carbon that improves soil structure, water retention, and microbial activity over centuries.

d) It sterilizes the soil to prevent weed germination.

40. Which technique involves integrating aquaculture with hydroponics in a closed-loop system?

a) Aeroponics

b) Permaculture

c) Silviculture

d) Aquaponics

41. The preservation of landraces and traditional crop varieties is vital for sustainability because:

a) They possess unique traits and local adaptations crucial for future crop breeding programs.

b) They generally produce much higher yields than modern hybrid varieties under optimal conditions.

c) They require significantly more synthetic inputs to grow successfully.

d) They are aesthetically identical to commercial supermarket varieties.

42. What is the environmental impact of 'leaching' in conventional agriculture that sustainable practices aim to prevent?

a) The accumulation of salts on the soil surface.

b) The washing away of soluble nutrients, especially nitrates, into groundwater causing contamination.

c) The rapid breakdown of soil organic matter.

d) The increase in soil temperature due to bare ground.

43. Which sustainable practice utilizes natural predators, parasitoids, or pathogens to manage pest populations?

a) Mechanical control

b) Cultural control

c) Biological control

d) Chemical control

44. 'Green manure' refers to:

a) Composted animal waste that has turned green.

b) The use of artificial green dyes to make crops look healthier.

c) Weeds that are left in the field permanently.

d) Crops grown specifically to be incorporated into the soil while still green to improve soil fertility.

45. In terms of crop productivity, what is the long-term benefit of implementing sustainable practices?

a) Stabilized yields and reduced vulnerability to environmental stresses like droughts and floods.

b) A sudden and permanent spike in maximum potential yield in the first year.

c) The elimination of the need for any human labor on the farm.

d) The ability to grow tropical crops in freezing climates without greenhouses.

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46. Which of the following best describes 'crop diversification' in the context of climate resilience?

a) Planting identical genetic clones of a single crop species across large areas.

b) Shifting from a single dominant crop to a wider variety of crops to spread economic and climatic risks.

c) Focusing solely on high-yielding, water-intensive cash crops.

d) Reducing the number of crop species grown to simplify management.

47. The excessive use of synthetic phosphorus fertilizers is discouraged in sustainable agriculture primarily because:

a) Phosphorus is toxic to all plant life in small amounts.

b) It causes plants to mature too slowly for harvest.

c) Rock phosphate is a finite, non-renewable resource that is rapidly depleting globally.

d) It decreases the soil's ability to hold water.

48. How does sustainable agriculture view the role of 'weeds'?

a) As absolute enemies that must be completely eradicated with chemicals.

b) As plants with no ecological value whatsoever.

c) As entirely beneficial plants that should always replace cash crops.

d) As part of the ecosystem that can sometimes provide ground cover, prevent erosion, or serve as habitat for beneficial insects.

49. Which concept evaluates the total environmental impact of an agricultural product from production to disposal?

a) Life Cycle Assessment (LCA)

b) Gross Domestic Product (GDP)

c) Economic Threshold (ET)

d) Maximum Sustainable Yield (MSY)

50. The utilization of drought-resistant and early-maturing crop varieties is a sustainable adaptation strategy specifically addressing:

a) The overabundance of irrigation water in lowland areas.

b) Changes in precipitation patterns and shortening of growing seasons due to climate change.

c) The desire to increase the length of the growing season.

d) The need to maximize the use of chemical growth regulators.

Detailed Answer Key (All 50 Questions)

Q1: **a**	Q2: **b**	Q3: **c**	Q4: **d**	Q5: **a**
Q6: **b**	Q7: **c**	Q8: **d**	Q9: **a**	Q10: **b**
Q11: **c**	Q12: **d**	Q13: **a**	Q14: **b**	Q15: **c**
Q16: **d**	Q17: **a**	Q18: **b**	Q19: **c**	Q20: **d**
Q21: **a**	Q22: **b**	Q23: **c**	Q24: **d**	Q25: **a**
Q26: **b**	Q27: **c**	Q28: **d**	Q29: **a**	Q30: **b**
Q31: **c**	Q32: **d**	Q33: **a**	Q34: **b**	Q35: **c**
Q36: **d**	Q37: **a**	Q38: **b**	Q39: **c**	Q40: **d**
Q41: **a**	Q42: **b**	Q43: **c**	Q44: **d**	Q45: **a**
Q46: **b**	Q47: **c**	Q48: **d**	Q49: **a**	Q50: **b**

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